REMARKS

Claim 30 is amended to improve its form.

Review and reconsideration on the merits are requested.

Claim 30 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, the Examiner asserts that the term "high-electrolytic solution permeability" is a relative term which renders claim 30 indefinite.

Applicants respectfully submit that the amendment to claim 30 overcomes this rejection. For example, the phrase "high-electrolytic solution permeability" has been deleted from claim 30.

Therefore, Applicants respectfully submit that claim 30 complies with 35 U.S.C. § 112. Reconsideration and withdrawal of the § 112 rejection are respectfully requested.

Claims 1, 2, 4-10, 30-33 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over "Nishimura" (EP 1,191,131) in view of "Gernov" (U.S. Patent 6,194,099) and "Parmentier" (U.S. Patent 6,361,900).

Claim 3 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishimura, Gernov and Parmentier as applied to claims 1, 2, 4-10, 30-33 above, and further in view of "Ouvry" (U.S. Patent 6,444,347).

Claim 14 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishimura, Gernov and Parmentier as applied to claims 1, 2, 4-10, 30-33 above, and further in view of "Qu" (U.S. Patent Application Publication 2003/0049531) and "Ishikawa" (U.S. Patent Application Publication 2003/0118908).

Claim 17 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishimura, Gernov, Parmentier, Qu, and Ishikawa, as applied to claim 14 above and further in view of "Yamada" (U.S. Patent 6,040,092).

Claim 34 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishimura, Gernov, and Parmentier as applied to claims 1, 2, 4-10, and 30-33 above, and further in view of "Takahashi" (U.S. Patent Application Publication 2003/0124424).

Regarding claim 1, the Examiner asserts that Nishimura discloses an electrode which comprises a carbonaceous material and carbon fibers having a diameter of 1mm or less. The Examiner acknowledges that Nishimura does not disclose the porosity of the electrode. However, the Examiner relies on Gernov as disclosing that it is known in the art that if one wants to achieve the highest possible volumetric density of the electroactive material and electrode, that it is desirable to maintain the porosity of airfolds as low as possible and that carbon nano fibers having a diameter of less than about 1000 nm should be used. See column 2, lines 60-67 and column 6, lines 20-29 of Gernov. The Examiner asserts that the discovery of an optimal value is an art-recognized result effective variable such that it would have been obvious to modify the electrode of Nishimura to have a low porosity as taught by Gernov as this produces the known result of achieving the highest possible volumetric density of the electroactive material in an electrode.

Further, the Examiner cites Parmentier as evidence that the specific porosity range of 25% or less is known in the art because Parmentier teaches a secondary cell electrode comprising a carbon fiber substrate with a porosity lying in the range of 10% to 30%. See column 1, lines 56-62 of Parmentier. Essentially, the Examiner relies upon Gernov as suggesting the specific porosity range of Parmentier to modify the electrode of Nishimura.

Applicants traverse for at least the following reasons.

Applicants respectfully submit that there is no teaching, suggestion, motivation, or other reason to combine Nishimura with Parmentier, because Nishimura teaches that the interlayer distance d002 between carbon layers as determined by an X-ray diffraction method is 0.335 to 0.342 nm or less. See Abstract of Nishimura. Specifically, an object of Nishimura is to enhance crystallinity and to reduce d002 to 0.3385 nm or less. See paragraph [0018] of Nishimura. In contrast, Parmentier teaches away from combination with Nishimura, because Parmentier teaches that the carbon fibers have a mean lattice surface spacing (d002) of not less than 0.36 nm, preferably 0.38 nm (col. 4, lines 1-4). Moreover, Parmentier teaches that when the lattice surface spacing (d002) is greater than that of graphite (typically 0.3354 nm) that the risk of exfoliation by repeated insertions and de-insertion of lithium ions is greatly reduced or eliminated. See col. 2, lines 6-11 of Parmentier.

In other words, it is critical in the invention of Parmentier to use carbon fibers having a low graphitization degree (i.e., having a mean lattice surface spacing (d002) of not less than 0.36 nm), because Parmentier teaches that there is a problem that exists with using a carbon-containing material in the form of graphite: i.e., the risk of exfoliation (col. 1, lines 39-42). Therefore, there is no motivation to combine Nishimura with Parmentier, because Nishimura teaches using carbon fibers having a high graphitization degree.

In view of these contradictory teachings, a person of ordinary skill in the art would not likely modify Nishimura with Parmentier, because Parmentier is directed to producing a mean lattice spacing that is not compatible with the intended purpose of Nishimura.

In addition, the Examiner asserts that Parmentier teaches a secondary cell electrode comprising a carbon fiber substrate with a porosity lying in the range of 10% to 30%. See col. 1,

lines 56-62 of Parmentier. However, what Parmentier teaches is a porosity of carbon fibers, not that of the electrode. Therefore, the porosity range recited in Parmentier cannot be applied to modify the electrode of Nishimura.

Regarding Gernov, Applicants respectfully submit that there is no teaching, suggestion, motivation, or other reason to combine Gernov with Nishimura in view of Parmentier. The Examiner relies on Gernov as disclosing:

> "it is desirable to maximize the weight per cent for electroactive materials in the coating layer, for example, 65 to 85 weight per cent for electroactive materials of a specific density of 2 g/cm^3, and to maintain the porosity or air voids in the cathode coating layer as law as possible." See column 2, lines 60-67 of Gernov.

However, Gernov discloses the porosity range of 40% to 60% in the following sentences, and neither teaches nor suggests the porosity range of 25% or less of the presently claimed invention.

Thus, the above description of Gernov shows that it was known in the art that the porosity range of 40% to 60% was necessary to achieve sufficient permeability of an electrolytic solution, but it also shows that the porosity range of 25% or less of the presently clamed invention was completely unexpected. Therefore, there is no motivation from the teachings of Gernov to reach the invention of present claim 1.

Claims 2-10, 14, 17, and 30-34 depend from claim 1, either directly or indirectly.

Therefore, Applicants respectfully submit that claims 1-10, 14, 17, and 30-34 are non-obvious over the cited references. Reconsideration and withdrawal of the § 103 obviousness rejections are respectfully submitted to be proper.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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